



Lead Free Thin Film Chip Fuse

Document No TCP-XXOS001A

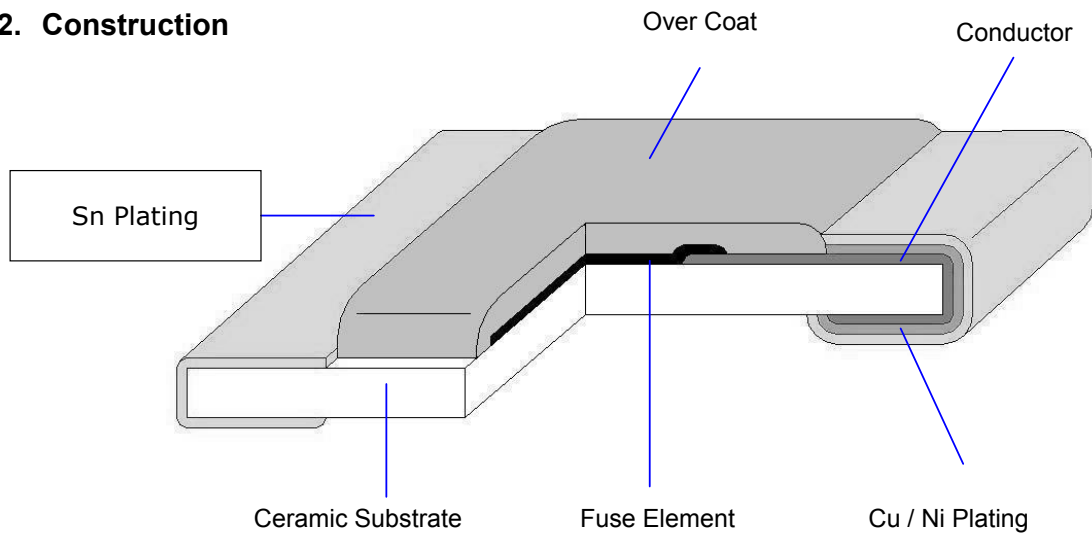
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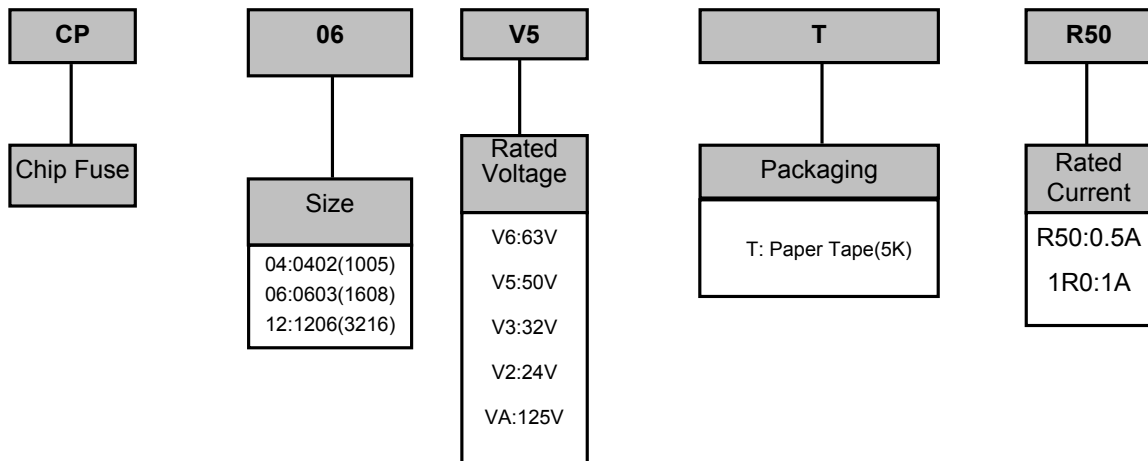
1. Scope

This specification applies for the Lead-Free fuse series of thin film chip fuse made by TA-I.

2. Construction



3. Type Designation



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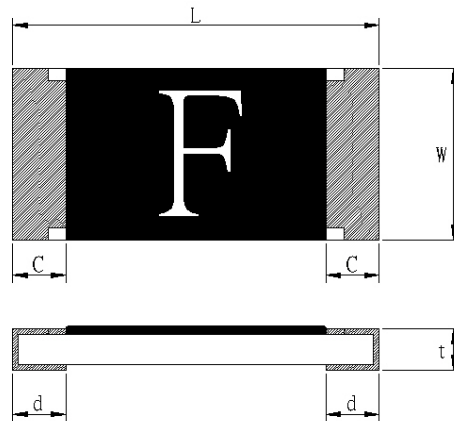
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4. Dimensions



Unit: mm

Type (Inch Size code)	Dimensions (mm)				
	L	W	C	d	t
CP04V (0402)	1.0±0.1	0.52±0.05	0.2±0.1	0.25±0.1	0.35±0.05
CP06V (0603)	1.6±0.1	0.8±0.1	0.3±0.2	0.35±0.2	0.45±0.1
CP12V (1206)	3.1±0.1	1.55±0.1	0.5±0.3	0.5±0.2	0.6±0.1

5. Applications and ratings

Part Designation	Marking	Rated Current	Fusing Time	Rated Voltage	Breaking Capacity	Body Temperature rising
CP04V2TR50	F	0.50A	Open within 5sec.at200% rated current	DC 24V	DC24V 35A	<75°C at 100% rated current
CP04V2TR80	K	0.80A				
CP04V2T1R0	L	1.00A				
CP04V2T1R25	M	1.25A				
CP04V2T1R50	P	1.50A				
CP04V2T1R60	N	1.60A				
CP04V2T2R0	S	2.00A				
CP04V2T2R50	T	2.50A				
CP04V2T3R0	3	3.00A				
CP04V2T3R15	U	3.15A				
CP04V2T4R0	W	4.00A				

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Part Designation	Marking	Rated Current	Fusing Time	Rated Voltage	Breaking Capacity	Body Temperature rising
CP06V5TR50	F	0.50A	Open within 5sec.at200% rated current	DC 50V	DC50V 50A	<75℃ at 100% rated current
CP06V3TR63	I	0.63A		DC 32V	DC32V 50A	
CP06V3TR80	K	0.80A				
CP06V3T1R0	L	1.00A				
CP06V3T1R25	M	1.25A				
CP06V3T1R50	P	1.50A				
CP06V3T1R60	N	1.60A				
CP06V3T2R0	S	2.00A		DC 24V	DC24V 50A	
CP06V2T2R50	T	2.50A				
CP06V2T3R00	3	3.00A				
CP06V2T3R15	U	3.15A				
CP06V3T4R0	W	4.00A				
CP06V3T5R0	Y	5.00A		DC 32V	DC32V 50A	

Part Designation	Marking	Rated Current	Fusing Time	Rated Voltage	Breaking Capacity	Body Temperature rising
CP12V6TR50	F	0.50A	Open within 5sec.at200% rated current	DC 63V	DC63V 50A	<75℃ at 100% rated current
CP12V6TR80	K	0.80A				
CP12V6T1R0	L	1.00A				
CP12V6T1R25	M	1.25A				
CP12V6T1R50	P	1.50A				
CP12V6T2R0	S	2.00A				
CP12V3T2R50	T	2.50A		DC 32V	DC32V 50A	
CP12V3T3R00	3	3.00A				
CP12V2T4R0	W	4.00A		DC 24V	DC24V 50A	
CP12V2T5R0	Y	5.00A				
CP12V2T7R0	Z	7.00A				

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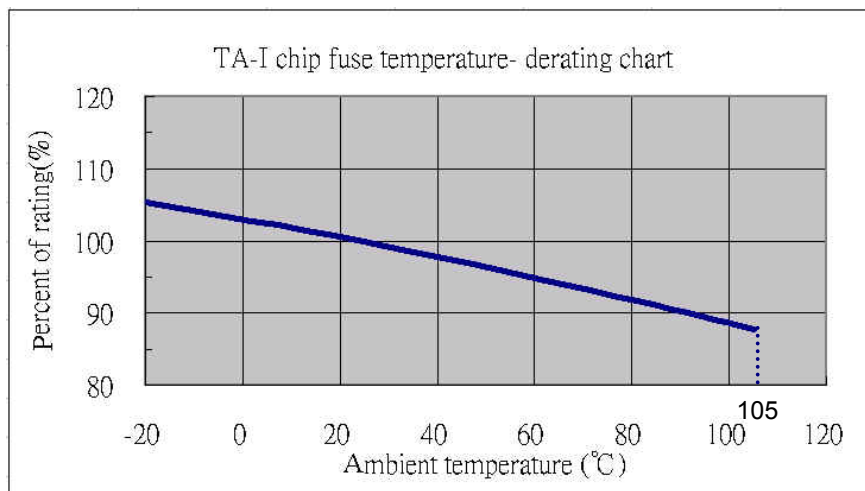
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6. Temperature Derating Curve

6.1 Normal Ambient Temperature: 25°C

6.2 Operating Temperature: -20°C~105°C, with proper Derating factor as below:



7. Reliability Tests

Parameter	Requirement	Test Method
Carrying capacity	No fusing	Rated current ,4hr
Fusing Time	Within 5sec.	200% of its rated current
Interrupting Ability	No mechanical damages	After the fuse is interrupted ,rated voltage applied for 30sec again
Bending Test	No mechanical damages	Distance between holding points: 90mm, Bending:3mm,1time ,30sec
Resistance to solder Heat	±20%	260°C±5°C,10seconds ±1second
Solderability	95% coverage minimum	235°C±5°C, 2±0.5second 245°C±5°C, 2±0.5second (Lead Free)
Temperature Rise	<75°C	100% of its rated current, Measure of surface temperature
Resistance to Dry Heat	±20%	105°C±5°C,1000 hrs
Resistance to Solvent	No evident damages on protective coating and marking	23°C±5°C of Isopropyl alcohol 90second
Residual Resistance	10kΩ and more	Measure DC resistance after fusing
Thermal Shock	ΔR< 10 %	-20°C/ +25°C/+125°C/+25°C , 10 cycles

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8. Marking

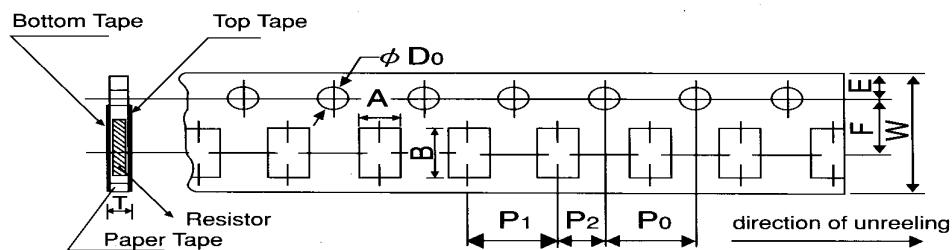
Symbol for Rating Current

Symbol	F	I	K	L	M	P	N	S	T	3	U	W	Y	Z
Rating Current(A)	0.5	0.63	0.8	1	1.25	1.5	1.6	2	2.5	3	3.15	4	5	7

9. Taping & Reel

9.1 Taping Dimensions

4mm pitch paper



Packing	Type	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Paper Tape	CP04V	0.7±0.05	1.2±0.05	8.0±0.2	3.5±0.05	1.75±0.1	2.0±0.1	2.0±0.05	4.0±0.1	$\phi 1.5^{+0.1}_0$	0.45±0.1
Paper Tape	CP06V	1.1±0.1	1.9±0.1	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.1	$\phi 1.5^{+0.1}_{-0}$	0.64±0.1
Paper Tape	CP12V	2.0±0.15	3.6±0.2	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.1	$\phi 1.5^{+0.1}_{-0}$	0.84±0.1

Unit: mm

Type Size		Paper Tape
		2 mm pitch
		180mm/R
CP	04V	10000

Type series		Paper Tape
		4 mm pitch
		180mm/R
CP	06V	5000
CP	12V	5000

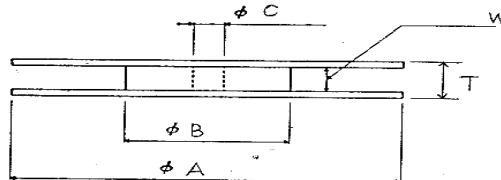
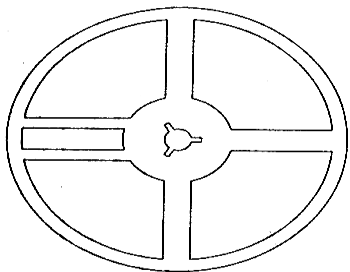
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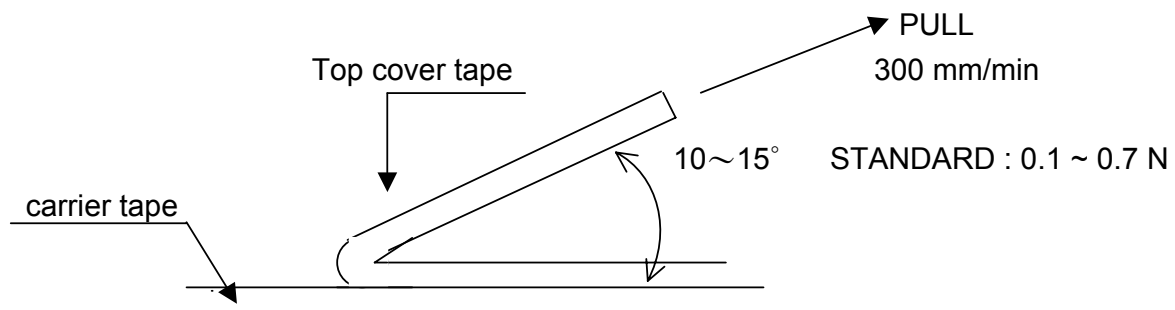
9.2 Reel Specifications



Unit: mm

Series	ϕA	ϕB	ϕC	W	T
CP04V CP06V CP12V	180^{+0}_{-3}	60 min	13.0 ± 1.0	9.0 ± 1.0	11.4 ± 2.0

9.3 Peel –off force :



10. Storage Conditions:

Temperature: 5°C~35°C, Humidity: 40%~75%

11. Shelf Life:

2 years from manufacturing date

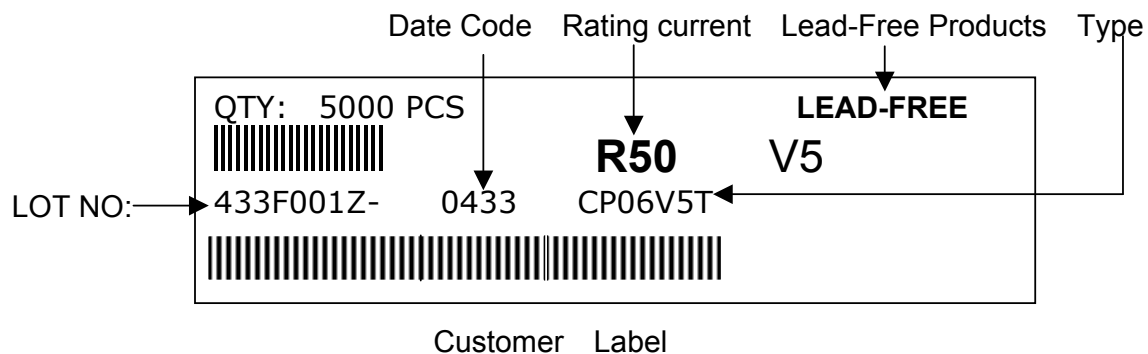
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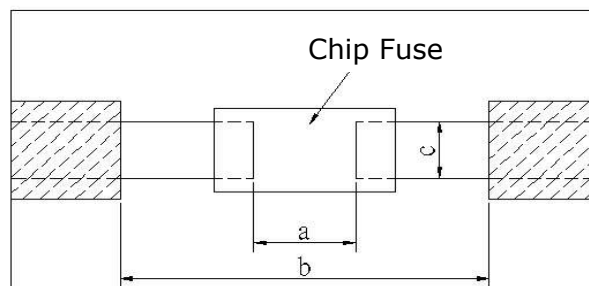
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12. Label



13. Recommended land patterns



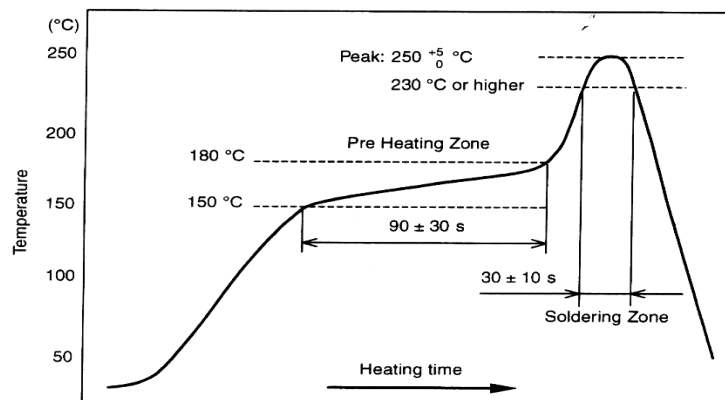
Land pattern Type Size		Dimension		
		a	b	c
CP	04 (0402)	0.5~0.6	1.4~1.6	0.4~0.6
CP	06 (0603)	0.7~0.9	2.0~2.2	0.8~1.0
CP	12 (1206)	2.0~2.4	4.4~5.0	1.2~1.8



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14. Recommend IR – Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : $250 \begin{smallmatrix} +5 \\ -0 \end{smallmatrix} ^\circ\text{C}$, 5 sec

Pre – heat Zone : 150 to 180 °C, 90±30 sec

Soldering Zone : 230°C or higher , 30±10 sec

15. Approval by UL248-14

The fuses have been approved by UL.

File No. of UL Recognition is E241710

16. ECN

Engineering Change Notice: The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.

17. Manufacturing Country & City :

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